



# MONTHLY OPERATIONS REPORT

**MOR#096**

**Reporting period from 01-Nov-2021 to 15-Dec-2021**

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## DOCUMENT CONTROL

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## 1. Summary

Since July 1<sup>st</sup>, 2020, PROBA-V operates as an experimental mission due to the declining overpass time only acquiring the European and African continent. On 31<sup>st</sup> of October 2021, this experimental phase was stopped as well. The vegetation instrument was switched to standby mode on October 31 23:59:59.

In the off-line mode, limited maintenance calibration segments will be acquired to assess the instruments degradation. The results thereof will be documented in the quarterly reports. As there are no other active acquisitions anymore, this consolidated report will only focus on the end user activities of the current archive. Additionally, we have moved the relevant KPI's in section 5 of this monthly report instead of a dedicated KPI report.

In terms of product dissemination, no significant downtime or interruptions were experienced. The amount of cumulative active users did however surpass 2000 in this reporting period!

Phase 3 of the reprocessing has started. In this phase, the complete PROBA-V archive is being processed. Due to set priorities, the period of January 2018 to June 2020 will be processed first. Afterwards, the period October 2013 to December 2017 will be handled. Expectation is that reprocessing activities will be concluded in Q1/2023.

## 2. System Infrastructure

Category	% Up Time	% Down Time
Switches	100.0	0.0
Database Servers	100.0	0.0
Mid Term File Servers	99.9	0.1 <sup>(*)</sup>
Short Term File Servers	99.9	0.1 <sup>(*)</sup>
Master Servers	100.0	0.0
Worker Nodes	99.9	0.1 <sup>(*)</sup>
PDF	100.0	0.0

Table 1: System Infrastructure availability for this reporting period

<sup>(\*)</sup> Network maintenance

## 3. Image Processing Services

### 3.1. Dissemination service

Product type	Added to catalogue	Ordered	Delivered
PROBAV_L1C	0	0	0
PROBAV_L2A_100M	0	0	3
PROBAV_L2A_300M	0	0	2
PROBAV_L2A_1KM	0	0	0
PROBAV_L3_S1_TOA_100M	4	111	116
PROBAV_L3_S1_TOC_100M	4	106	2341
PROBAV_L3_S1_TOC_NDVI_100M	4	304	286
PROBAV_L3_S5_TOA_100M	1	0	3
PROBAV_L3_S5_TOC_100M	1	0	216
PROBAV_L3_S5_TOC_NDVI_100M	1	368	369
PROBAV_L3_S1_TOA_300M	4	204	214
PROBAV_L3_S1_TOC_300M	4	797	842
PROBAV_L3_S10_TOC_300M	1	2	7
PROBAV_L3_S10_TOC_NDVI_300M	1	386	1532
PROBAV_L3_S1_TOA_1KM	4	4	10
PROBAV_L3_S1_TOC_1KM	4	7	13
PROBAV_L3_S10_TOC_1KM	1	2	6
PROBAV_L3_S10_TOC_NDVI_1KM	1	81	85

Table 2: Ordered and delivered products for this reporting period

## 3.2. End-user activity

12 new user(s) were registered in this reporting period.

The total number of users registered for PROBA-V data and that have ordered data is **2002** with **124** different nationalities representing **1454** different companies/universities.

Product type	Africa	Asia	Europe	N-America	Oceania	S-America
PROBAV_L1C	0	0	0	0	0	0
PROBAV_L2A_100M	0.00	0	0.87	0	0	0
PROBAV_L2A_300M	0	0	0.48	0	0	0
PROBAV_L2A_1KM	0	0	0	0	0	0
PROBAV_L3_S1_TOA_100M	0.05	49.39	1803.60	0	0	0
PROBAV_L3_S1_TOC_100M	0	0.43	1961.79	125.21	0	0
PROBAV_L3_S1_TOC_NDVI_100M	0	0	0.24	0	0	0
PROBAV_L3_S5_TOA_100M	0	0	0.90	0	0	0
PROBAV_L3_S5_TOC_100M	0	46.61	17.76	0	0	18.29
PROBAV_L3_S5_TOC_NDVI_100M	0.19	2.58	0	0	0	0.92
PROBAV_L3_S1_TOA_300M	0	0.05	12.60	0	0	1994.06
PROBAV_L3_S1_TOC_300M	0	0	70.55	61.77	0	0
PROBAV_L3_S10_TOC_300M	0.03	0	6.03	0	0	0
PROBAV_L3_S10_TOC_NDVI_300M	2.08	1.13	89.40	0	0	0
PROBAV_L3_S1_TOA_1KM	0	0.01	1.81	0	0	0
PROBAV_L3_S1_TOC_1KM	0	0	3.69	0	0	0
PROBAV_L3_S10_TOC_1KM	0.20	0.00	0.80	0	0	0
PROBAV_L3_S10_TOC_NDVI_1KM	0.18	0.52	0.01	0	0	0

Table 3: Data download (GB) in total per Origin of the User for the reporting period

Product Type	Global
L1C	0
PROBAV_L2A_100M	0.87
PROBAV_L2A_300M	0.48
PROBAV_L2A_1KM	0
PROBAV_L3_S1_TOA_100M	1853.03
PROBAV_L3_S1_TOC_100M	2087.42
PROBAV_L3_S1_TOC_NDVI_100M	0.24
PROBAV_L3_S5_TOA_100M	0.90
PROBAV_L3_S5_TOC_100M	82.65
PROBAV_L3_S5_TOC_NDVI_100M	3.69
PROBAV_L3_S1_TOA_300M	2006.71
PROBAV_L3_S1_TOC_300M	132.32
PROBAV_L3_S10_TOC_300M	6.06
PROBAV_L3_S10_TOC_NDVI_300M	92.61
PROBAV_L3_S1_TOA_1KM	1.81
PROBAV_L3_S1_TOC_1KM	3.69
PROBAV_L3_S10_TOC_1KM	1.00
PROBAV_L3_S10_TOC_NDVI_1KM	0.72

Table 4: Data download (GB) in total for the reporting period

Company	# Downloads
VISIOTERRA	2199
JOINT RESEARCH CENTRE	810
UPMC	782
UNESP JÚLIO DE MESQUITA FILHO	292
ZIMPARKS	290
KU LEUVEN	285
ICMBIO	200
DESCARTES UNDERWRITING	164
SHANDONG FORESTRY SCIENCE RESEARCH INSTITUTE	108
SPACE APPLICATIONS CENTRE (ISRO)	97

Table 5: Top 10 user companies for the reporting period

Country	# Users
CHINA	219
BELGIUM	167
INDIA	99
FRANCE	92
BRAZIL	85
UNITED STATES	83
ITALY	80
NETHERLANDS	70
UNITED KINGDOM	66
GERMANY	63

Table 6: Top 10 countries with most registered users

**List of issues raised by users:**

- PDF: N.A. - Mohamed Kroush - 2021/12/7 - Forgot user name
- Ref. RITM0081484 - documentation on PROBAV LO data



## 4. Image Calibration services

For the next phase in its lifetime, PROBA-V will acquire only a limited amount of segments, for accommodating instrument sanity, while it is in a hibernate condition. The instrument is kept in stand-by for reasons the thermal stability.

A limit number of calibration images will be acquired to monitor both radiometric and geometric sanity of the instrument. The acquisitions will serve both methods 'at once' as much as possible.

For radiometry it is decided that lunar measurements over the full cycle will be continued every month. As an addition to this, few dark current (DC) acquisitions will be done to allow for the automated monitoring of the dark signal and bad pixel detection. The DC will be acquired for all 3 cameras. The amount of calibrations in a month will be 19 form lunar and 2 for DC resulting in < 1GByte in data.

To combine acquisitions for absolute radiometric and geometric calibration, a survey is still on-going to identify the appropriate location/site. The calibration region needs to contain both a radiometric reference in the absolute scale and sufficient geometric features. A good candidate is currently being investigated : Railroad Valley, which is an instrumented RadCalNet-site. The wider range area also contains quite a few geometric features to be used to perform a limited geometric assessment.



Figure 1: Railroad Valley area

## 5. KPI metrics

### 5.1. Management Service

#### 5.1.1. PROV-KPI-0010: Reporting

Report	Due Date	Delivery Date	Delay	Remarks
PROBAV_D6_MOR-095_2021-11_v1.0.pdf	20/11/2021	24/11/2021	1	
PROBAV_D15_KPI-089_2021-10_v1.0.pdf	20/11/2021	24/11/2021	1	
KPI value (1 if 100% within time)			1	

Table 7: PROV-KPI-0010 calculation for this reporting period

### 5.2. System infrastructure services

#### 5.2.1. PROV-KPI-0040: Network availability

Network	Issue	Reported at	Solved by	Delay	Remarks
LAN	none			0	
Inter-site	None			0	
Internet	None			0	
KPI value (1 if max. delay < 18h)				1	

Table 2: PROV-KPI-0040 calculation for this reporting period

#### 5.2.2. PROV-KPI-0041: System infrastructure availability

Issue	Reported at	Solved by	Delay	Remarks
None			0	
KPI value (1 if max. delay < 18h)			1	

Table 3: PROV-KPI-0041 calculation for this reporting period

### 5.3. End-user support services

#### 5.3.1. PROV-KPI-0050: Helpdesk response time

Issue	Created at	Answered by	Delay (*)	Remarks
<b>PDF: N.A. - Mohamed Kroush - 2021/12/7 - Forgot user name</b>	07/12/2021 20:51	08/12/2021 09:29	0,25	
<b>Ref. RITM0081484 - documentation on PROBAV LO data</b>	02/12/2021 17:22	02/12/2021 18:08	0,25	
<b>KPI value (1 if max. delay &lt; 5 NWD)</b>			<b>1</b>	

Table 4: PROV-KPI-0050 calculation for this reporting period

(\*) Response time is expressed in working days with a resolution of 0.25 days.

### 5.4. KPI evaluation

Each KPI is assigned a weighing factor (w) from 0 to 10, this weighing factor is used to calculate the service credits due according to the formula:

$$\text{Service Credit} = \frac{\sum_i w_i (1 - KPI_i)}{\sum_i w_i} \times \text{max Monthly Service Credit}$$

KPI Reference	Description	Metric	1-KPI	Weight	Result
PROV-KPI-0010	Reporting	1	1	10	10
PROV-KPI-0040	Network availability	1	0	6	0
PROV-KPI-0041	System infrastructure availability	1	0	6	0
PROV-KPI-0050	Helpdesk response time	1	0	9	0
<b>Totals</b>				<b>31</b>	<b>10</b>
<b>Service credit coefficient</b>				<b>30%</b>	
<b>Service Credit</b>				<b>0</b>	

Table 11: Service credit evaluation for this reporting period

## 6. Ongoing and future activities

### 6.1. Reprocessing activities

In this reporting period, Phase 2 of the reprocessing (C2) was finalized, consolidating period July 2018 to June 2019. No significant issues were found during validation of this time series. However, due to the increased resources needs for the atmospheric correction and cloud detection modules, the processing speed is about 6 days per 24h of processing (all products).

Mid December 2021, the final reprocessing started with the period of January 2018 to June 2020 in order to give early access to the Copernicus Services for continuation of their evolution tasks. Once finished, the period of October 2013 to December 2017 will be reprocessed. During this phase, speed improvements by shuffling processing resources will be looked into.